



inps journal

Indiana Native Plant Society

Summer 2023

Kankakee Sands – 25 years!

By Alyssa Nyberg

Today Nature Conservancy's Kankakee Sands is 8,000 acres of restored prairie, connecting Willow Slough Fish and Wildlife Area, Conrad Savanna, Conrad Station Savanna, and Beaver Lake Nature Preserve. This adds up to more than 20,000 acres of natural area, free and open to the public in Newton County Indiana!

But just 25 years ago, Kankakee Sands wasn't Kankakee Sands.

When I stood here at Kankakee Sands some twenty-five years ago, I saw corn and beans, corn and beans, corn and beans, and corn and beans in each compass direction. Where I saw fields of row crop agriculture, The Nature Conservancy (TNC) saw what could be a thriving prairie ecosystem. Thanks to decades of hard work by TNC staff, volunteers, and partners, the vision of a thriving prairie has become a reality. Today there are thousands of acres of prairie teeming with thousands upon thousands of species of plants, birds, insects, and mammals.

When the Kankakee Sands project first started, our entire staff of just nine people – five full-time staff and four seasonal staff – worked out of a little building with leaking windows and crumbling wood siding. Our nursery facilities did not consist of a greenhouse, pole barn, tractor, and a panoply of equipment. Nope, it was just one port-o-john in a field of wildflowers, with all the tools locked inside overnight.

The work over 25 years was not glamorous. It involved harvesting seeds, cutting trees, spraying herbicide, installing fences, mowing, board meetings, paperwork, and answering phone calls. But all was for the good of the natural world and those who follow us.

Over the course of 25 years, 181 people have worked at Kankakee Sands, which includes not only TNC employees but also Applied Ecological Services employees who were contracted to get Kankakee Sands off to a good start those first few

years. Also over those years of growth and change volunteers have given more than 20,000 hours of their time. 20,000 hours!

Thanks to the partnership with "Friends of the Sands," hundreds of people come out each year to enjoy events such as hikes at Conrad Station Savanna, "mothing" at night, woodcock walks and short-eared owl prowls, reminiscing about prairie chickens at Beaver Lake Nature Preserve, learning how to tag monarch butterflies, evening sunset seed cleanings, and native plant sales. Lives are enhanced.



Paul Rothrock

Alyssa with several of the volunteers who collectively contributed over 20,000 hours to Kankakee Sands restoration efforts.

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Of those who have worked and volunteered here, a great majority have stayed in touch. Some have gone on to careers in conservation. Others have incorporated their love of nature into their roles as educators, medical professionals, parents, caregivers, engineers, and librarians, to name a few.

We are indebted to the many hands, hearts and minds who have truly given their blood, sweat, and tears to make Kankakee Sands possible. I and many others remember:

- mosquitos, ticks, and minor scrapes and bruises that took our blood
- humid summer days spraying herbicide
- long days on the fireline keeping the prescribed fire in check
- finalizing budgets in the final hour and taking part in deep but long conversations to come to important decisions

Kankakee – continued on page 2

Kankakee — *continued from front*



Olivia Schouten/TNC

Kankakee Sands is expansive enough to support a herd of bison as well as the regal fritillary butterfly (*Speyeria idalia*), another rare inhabitant of tall-grass prairies.

conservation partner with us, please smile. If you do or have worked at Kankakee Sands as a paid employee, please smile. If you have served on a TNC board or advisory council, please smile. If you have been or are currently a TNC Indiana staff member, please smile. If you've donated to TNC, please smile. If you have enjoyed visiting Kankakee Sands and have hoped for the very best for Kankakee Sands, please smile. We all truly carry this place in our hearts, in our memories. It's a magnificent thing that we have created here, created together.

It will only get better for sure. And an important way to document that is scheduled for this summer. Kankakee Sands will host the 2023 Indiana Academy of Science's Bioblitz, where experts from around the state come to identify as many different taxa as possible in 24 hours. We are excited to learn more about all the species that are utilizing Kankakee Sands and get a better picture of all that we have created here together!

So, to the next 25, and to all of you, cheers!

Alyssa Nyberg, a member of the West Central Chapter of INPS, is a Restoration Ecologist at Kankakee Sands and has worked at Kankakee Sands since 1999.

I want to thank all of you for supporting us in so many ways during the past 25 years. If you have volunteered at Kankakee Sands with us, please smile. If you have been a

Olson — *continued from right*

Kemil Beach from the parking lot, think of Jerry Olson and his passion for succession in dune systems. Consider the role the soils play in driving vegetation changes in the Dunes. If you want to learn more about Olson's contributions to ecology, go to the Resolution of Respect (Dale et al. 2021): there are lots of fascinating tidbits about this preeminent scientist.

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Footnote

¹ Vegetation succession is the study of plant community change over time and the processes that shape those changes. For more about the process and about Henry Cowles, who pioneered its study, see "The Indiana Dunes" in INPS Journal 28(2), summer 2021.

Noel B. Pavlovic, a member of the North Chapter of INPS, is an ecologist working at the US Geological Survey, Great Lakes Science Center, Lake Michigan Ecological Research Station in the Indiana Dunes National Park.

A Passion for Sand Dunes – Jerry Olson (1928-2021)

By Noel B. Pavlovic

For young and old alike, sand dunes often evoke the desire to run up and down. For capitalists, they are material for filling low places, making cement, casting iron, or fracking natural gas. For others, sand dunes are places of beauty that rejuvenate the soul. For Jerry Olson they were places for experimentation to understand vegetation succession¹ and how ecosystems work and change.

Jerry Olson grew up in River Forest, Illinois. By the time he was 23, he had completed four degrees at the University of Chicago. His seminal PhD work focused on how soil development interacts with vegetation succession as first elucidated by Henry Chandler Cowles (Cowles 1899).

At the Indiana Dunes, Jerry demonstrated that as sand dunes age, soil pH decreases (i.e., acidity increases), the result of nutrients being leached deeper in the soil. As a consequence, the last stage of succession, the formation of a beech-maple climax forest (Olson 1958), is prevented. Instead the vegetation is dominated by species that can tolerate low nutrient soils. This contention was later proven in Australia by John Walker, where vegetation advanced and declined in a 100,000 year old dune sequence (Walker et al. 1981). Jerry's work proved Cowles' contention that vegetation succession was "a variable approaching a variable," put Cowles' argument into a quantitative framework, and won Jerry the prestigious Mercer Award from the Ecological Society of America in 1958. That work was packed with new ideas including soil development models from Swiss-born soil scientist Hans Jenny, and a novel logarithmic scale for quantifying plant abundance.

The sand dunes along the east side of Indiana Dunes State Park were a particular focus for Olson's research as they provided a nearly 15,000-year-old dune sequence: modern day foredunes and blowouts, 4,000 year old Tolleston Dunes with oak savanna and woodland, 11,000 year old Calumet Dunes (just south of US 12 at the USGS office), and 14,000 year old Glenwood Dunes just north of US 20. His previous geological work looked at the role of wind and vegetation in the creation of sand dunes, work that was done at what is now Marquette Park,

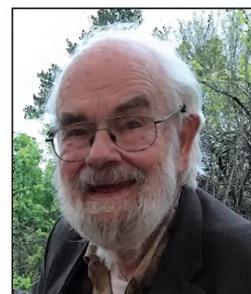
Gary's premier Lake Michigan Park in Miller.

Most of Jerry's career was spent at the Ecological Division of the Oak Ridge National Laboratory in Oak Ridge, Tennessee. He was involved in pioneering research on how nutrients and energy flow in ecosystems and in developing worldwide maps of ecosystems and vegetation before the advent of Geographic Information Systems (GIS). He continued his interest in sand dunes, publishing two papers about organic and physical forces of dune formation and a worldwide classification of dune systems (Olson 1997, Olson & van der Maarel 1997).

Few knew Jerry Olson unless you worked at the Indiana Dunes or you worked among circles of ecological and regional movers and shakers. I met Jerry in 1986 at the First Indiana Dunes Research Symposium. In the early 1990's, Jerry began to show up at the dunes every several years, timed with his University of Chicago reunions, to make sure his legacy was passed on. He was still interested in how habitats near each other could be so different and how they would change in the future. Thus, over the next 25 years, he established a series of vegetation plots from Marquette Park to the east side of the Indiana Dunes to document succession into the future. The first plot I know of was established in Ecology Cove (Lindsey et al. 1969) in the Dunes State Park with the assistance of then state park naturalist, Wendy Smith. Throughout his career Jerry was a strong advocate for protecting the Indiana Dunes.

Having taken a systems ecology course at the University of Tennessee as a graduate student, I was familiar with ecological modeling and systems ecology and so could talk to Jerry. People that would interact with him wouldn't have the stamina to listen to his many original ideas and often convoluted yet rational long conversations. I hosted Jerry whenever he visited and provided technicians to help him with his vegetation work. Some of his plots established on the Glenwood and Calumet Dunes are now incorporated into the fire monitoring program at the Indiana Dunes National Park. Additional plots were established the last few years that he came to the dunes.

The next time you are hiking the Dune Ridge, Calumet, or Glenwood Dunes trails or walking to



Martha Cox

Read more about Olson's contributions to the studies of ecosystem ecology, succession, and more at esajournals.onlinelibrary.wiley.com/doi/10.1002/bes2.1879.

Olson — continued at left

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Hoosiers' Willingness to A TNC Study

By Melissa Moran

Social science can support conservation by helping leaders understand people's willingness to act for nature.

In this critical decade for climate and humanity's future, "business as usual" means that we face catastrophic climate change, failing water supplies, biodiversity loss, and other environmental challenges that threaten both people and nature. But there is a second path, a path where people recognize the vital role nature plays in their lives and are moved to care for it.

The Nature Conservancy (TNC) has undertaken a project to attempt to measure changing mental models in Indiana. Of Indiana's 4.7 million voting-age Hoosiers, TNC aspires to have 20% who meaningfully participate in decision-making about human activity that affects the environment. This may include decisions around purchases, use of resources, transportation, and voting for candidates with an understanding of how these decisions affect the environment, the climate, and our communities.

In 2020, a marketing and social science consultant helped develop a model and questionnaire to benchmark current attitudes, perceptions, and activities in Indiana. The survey was designed to explore how the following messages resonated with Hoosiers:

- Nature matters to you.
- You and your community need nature.
- It is urgent that you help nature.
- Your actions matter.

A baseline survey was conducted in November 2020 with 535 respondents participating, a statistically significant percentage of the state's voting-age population. Within the group of respondents, quotas were established and met for participants according to level of education, gender, race, and political affiliation. The survey was repeated in November 2022 (TNC 2022).

The survey included 31 questions about individual choice, activity, and beliefs related to nature, the environment, and climate change. A few additional questions explored which sources of information on the environment were most trusted.

Ten questions explored willingness to undertake pro-environmental behaviors. Overall, there is encouraging news. Based upon the survey



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Funds raised through T-shirt sales go to support INPS native plant education and conservation activities.

averages, 16% of Hoosiers (~755,000) definitely will take actions and a total of 41% (1.9 million) definitely or probably would act.

In the two-year period between the baseline survey and the follow-up, statistically significant increases were observed for three pro-environmental behaviors:

- Visit a favorite nature place with family or friends, increased 8% or 376,000 people.
- Plant native plants or trees at my home or in my community, increased 7% or 329,000 people.
- Post pictures on social media about nature, increased 8% or 376,000 people.

The responses received from the 2020 and 2022 surveys are tabulated at right.

The remaining survey questions explored rational motivation, emotional motivation, perceived control, and social norms that may influence human behaviors and inspire people to act for nature. The results from 2020 and 2022 were similar. Here is an overview of those questions:

Rational Motivation Queries

- Activities/purchases to improve the environment are worth the cost, time, and effort a person puts into it.
- It makes good economic sense to move to renewable energy sources such as solar and wind.
- The sooner we get away from fossil fuels such as gas, oil, and coal the better, even if it may cost more.
- Investing in conservation is a worthwhile use of tax dollars.
- We need collective actions for our environment and to conserve nature.

Responses: Generally, 30-45% of voting-age Hoosiers agree with these statements.

Emotional Motivation Queries

- I feel proud to do my part to conserve resources.
- There is an enduring connection between the environment (or nature) and me.
- I care about nature for outdoor and recreational activities.
- I care about nature and the environment more for future generations.
- I feel nature is more at risk now than it was five years ago.

Take Action for Nature:

- Climate change is a bigger concern for me now than it was five years ago.
- I worry about endangered species in Indiana.
- I value nature for my physical and mental health more than I did two years ago.
- I feel that the connections between humans and their effect on nature are at a tipping point.

Responses: Generally, 40-50% agree with these statements.

Social Norm Queries

- I like to think of myself as among those that care for the environment.
- My friends will think better of me if I take environmental concerns seriously.
- We need collective actions for our environment and to conserve nature.

Responses: Generally, 20-45% agree with these statements.

Perceived Control Queries

- My personal actions will not have much effect on improving the environment.
- Climate change effect is 20 to 30 years out so there is little I can do now.
- Climate change has been happening for centuries so there is no urgency.
- I feel that my donations to environmental and conservation organizations won't make a difference.

Responses: Generally, 20-40% disagree with these statements.

Other good news: The top trusted sources of information to learn about nature, the environment, and climate change are nature and environmental organizations or associations (such as INPS, TNC and many other similar organizations), with 45% agreeing or strongly agreeing that they trust information from these sources.

With 16% of Hoosiers definitely taking actions and a total of 41% (1.9 million) definitely or probably acting for nature, Indiana is very close to the goal of 20% who meaningfully participate in decision-making about human activity that affects the environment. During the past two years, the number of people visiting favorite nature places, planting native trees or plants, and posting pictures about nature on social media has increased significantly, by approximately 350,000 voting-aged Hoosiers. Perhaps not

surprisingly, most people are enjoying nature close to home, in their yard or neighborhood.

The very exciting news for INPS and nature is the tremendous increase in people who are planting native plants and trees in their home or community, a big plus for biodiversity. At the same time an opportunity exists for the conservation community to not only inspire individual actions such as planting a tree, but also collective actions such as community-wide activities designed to slow climate change.

Melissa Moran is the Director of Community Programs for The Nature Conservancy in Indiana. She is a member of the INPS Central Chapter and has been active with the INPS Plant Sale & Auction Program.

Pro-Environmental Behaviors: Percentage of Respondents in Three Groups 2020/2022			
Behavior	Definitely or Probably Would	Might or Might Not	Probably or Definitely Would
<i>Discuss the need to preserve or restore nature with family or friends</i>	27/24	29/32	44/44
<i>Visit a favorite nature place with family or friends</i>	18/11	23/21	60/68
<i>Plant native plants or trees at my home or in my community</i>	28/24	28/25	45/52
<i>Post pictures on social media about nature</i>	42/37	24/22	33/41
<i>Vote for a candidate that supports environmental legislation</i>	14/16	34/32	52/52
<i>Talk with family or friends about climate change and what you are doing about it</i>	33/34	30/27	37/39
<i>When possible, use a more fuel-efficient option for transportation</i>	44/43	26/23	31/33
<i>Eat a more plant-rich diet (less meat) to help the planet</i>	45/45	26/25	29/31
<i>Volunteer for nature or conservation efforts</i>	41/38	32/34	27/28
<i>When possible, increase my use of public transportation to reduce energy</i>	57/56	21/23	22/21

Reference

TNC (The Nature Conservancy of Indiana: Consumer Research). 2022. Sullivan Consulting. To request a copy of the full report, email Melissa.Moran@tnc.org.

Book Review:

“The Gardener’s Guide to Prairie Plants”

by Neil Diboll and Hilary Cox

Reviewed by Natalie Marinova

The Gardener’s Guide to Prairie Plants (2023, The University of Chicago Press, Chicago & London) is a practical how-to book about incorporating native prairie plants into the home and small property setting. The focus of the guide is the utilization of prairie plants as they naturally grow, i.e., in mixed plantings, rather than as a formal landscape in the traditional sense of small beds around the home.

The main bulk of the book (Chapter 5) serves as a plant identification guide, covering 148 species. Diboll and Cox provide range maps for each species and information that goes beyond typical gardening facts such as light requirement, soil type, bloom time, flower color, and plant height. The native plant gardener will appreciate their detailing of factors such as life expectancy, root type, propagation, spacing, and aggressiveness, as these added bits of information are crucial in determining plant placement in a design or planting. How a plant behaves and reproduces can inform whether the plant belongs in a home garden and determine the placement and appropriate quantities to use.

Though an identification key is not provided, numerous photos of the plant from seedling stage to flowering to mature seed are exceptionally helpful in identification. Short written entries also cover look-alike plants.

In Chapter 4 the authors provide excellent guidance on design, planting, and maintaining prairie gardens. Their “Twelve Tips for Designing Prairie Gardens” are particularly useful.

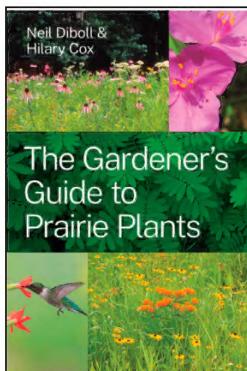
While chapters 4 and 5 are enough to make this book indispensable for years to come, the remainder of the book goes beyond individual plant species and gives the reader a more comprehensive guide of interest for both the beginner and experienced gardener. Chapter 2 recounts the history of prairies in the United States (the original sizes of prairies compared to what remains is staggeringly depressing) and what makes them “tick” ecologically. Other chapters cover understanding your soil, establishing a successful prairie meadow, burning your prairie, plant propagation, the prairie food web, and various seed mixes. Chapter 12 rounds the book out with a plethora of tables, 30 to be exact, covering topics that range from wildlife association with individual plants, to arrangement

of plants by soil type and bloom time, highlighting color of flowers by soil moisture (white, yellow, purple and lavender, and red, pink, and orange), and arrangement by height and plant spacing. There are also tables on deer resistant species, propagation methods, and common weeds, concluding with cost comparisons of installation and maintenance for prairies versus lawns.

Overall, the writing is straightforward, presenting easily usable and digestible information – something for every native plant gardener. Aside from the individual species chapter, I personally found most interest in the discussion of prairie ecology and food webs. Chapter 10, “The Prairie Food Web,” dedicates most space to the largest group of prairie inhabitants, the insects, “the foundation of the prairie food web.” The diverse insect groups range from native bees to wasps, ants, dragonflies, beetles, and more. Through this chapter, I was reintroduced to the term oligoleges, which refers to specialist insects that only pollinate one genus or sometimes only a single species. I found the predaceous velvet ants (which are actually wingless wasps) to be particularly fascinating. Without insects in the prairie, what else would not be there? Far fewer birds, I imagine! This chapter also covers the various vertebrate animals including canines and ungulates. On the historical significance of ungulates in the prairie, the authors note that: “Large ungulates no longer roam freely across the American prairie. However, one can discover an incredible diversity of creatures that depend on prairie plants in one’s own backyard. ... birds, butterflies, and bees will flock to prairie gardens, a magnifying glass can [further] reveal an undiscovered world of tiny creatures that are ecologically essential and make these flowers and grasses their homes. These seemingly unimportant organisms are the true building blocks of the prairie food web upon which so many others depend – hidden in plain sight for us all to see, if we only look.” All of this emphasizes the importance of having native plants in our landscapes.

Diboll and Cox provide a guide that is mostly directed toward the small home and small landowner. Yet, their long experience and expertise, and compilation of their wealth of knowledge, can speak to professionals as well.

Review — continued at right



Hilary’s book will be available for sale at AC23, where she will also be presenting. See next page for more details.

INPS Annual Conference 2023

Native plant lovers, you are going to find much to enjoy and learn at the 2023 INPS Annual Conference on October 28 at the Monroe County Convention Center in Bloomington. This conference will be bigger and better than ever as we celebrate the 30th anniversary of INPS.

Two keynote speakers will be featured this year. Dr. Beronda Montgomery, author of *Lessons from Plants*, will speak on how we might improve human society by better appreciating not just what plants give us but also how they achieve their own purposes. Heather Holm, a biologist, pollinator conservationist, and award-winning author of four books, will speak on creating and managing landscapes for native bees. Books from both keynote speakers will be for sale at the conference.

Kevin Tungeswick, former native plant and seed production director at Spence Restoration Nursery and current Senior Ecologist at Eco Logic LLC, and Hilary Cox, owner and landscape designer of Leescapes Garden Design for over twenty years and recent co-author of *The Gardener's Guide to Prairie Plants* (also for sale at the conference), will take on a perennially controversial topic in a panel discussion titled 'Are Nativars Beneficial or Harmful? It's Complicated....'

Rich Hull, fourth-year PhD student in the Knox Lab at Indiana University Bloomington, will take us on a journey comparing plants Charles Deam found along the lower Wabash River corridor 100 years ago to his contemporary inventory of 46 sites. Andrea Huntington, executive director of the Indiana Land Protection Alliance, will give attendees insights on how Indiana land trusts are collaborating with state and local initiatives to protect Indiana's natural heritage. Dawn Slack, project coordinator for the Indiana Invasives Initiative, will share the inspiring and heartfelt work being done around the state to decrease the impact of invasive species.

Plan to come early, as there will be activities on Friday October 27 as well! A hike at Brown County State Park, co-led by retired naturalist Jim Eagleman and current naturalist Eli Major, will focus on the change in vegetation over time at the park. Joanna Sparks, Bloomington Urban

Greenspace Manager, will lead a walk through the extensive native plantings at Switchyard Park in Bloomington. David Mow, Morgan County Soil and Water Conservation District, and Steve Cotter, City of Bloomington Parks and Recreation, will co-lead a hike at Griffy Woods Nature Preserve. See how recent fire and deer management underway at the site are benefitting the diverse native flora. There will also be two workshops geared to native plant gardeners on Friday in the Courtyard Marriott (which is connected to the Monroe County Convention Center). Hilary Cox will lead a workshop on the design and maintenance of prairie gardens, and Bill Daniels will lead a workshop on how to propagate native plants from seed.

Save the date for this exciting conference on your calendar now. Registration for the conference will open August 1. Discounted hotel rooms at \$159/night are available for reservation at the Courtyard Marriott at <https://tinyurl.com/3c9tn8bm>, and there are several other hotels within a 10-minute drive of the Convention Center.



Courtesy of Beronda Montgomery

Keynote speaker Dr. Beronda Montgomery is author of *Lessons from Plants*.



Courtesy of Heather Holm

Keynote speaker Heather Holm is a well-known pollinator conservationist.

Review — continued from left

I highly recommend including this quite usable and practical book in your library, as a valuable reference and potential introduction to new concepts and practices for yourself, as well as to share with others the importance of native prairie plants.

Natalie Marinova, a member of the South Central Chapter of INPS, has worked with native plants since her introduction to them at Berea College in 1996. She became a principal owner of Eco Logic LLC in 2020, overseeing installation, planting, and green infrastructure projects for the company, and advising on management decisions.

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Mission

To promote the appreciation, preservation, scientific study, and use of plants native to Indiana.

To teach people about their beauty, diversity, and importance to our environment.

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South Central	Kris Ligman
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Goose Pond Plant Hunters: A 2022 Florathon Team

By Barbara Simpson

My first Florathon was in 2022. I've been an INPS member for several years but never joined the Florathon, feeling as though I, an animal and environmental policy wonk, am terrible at wildflower ID. But I decided it was time to get a team together: 1) I need to start building my skills if I intend to move beyond coneflowers, milkweed, and Silphiums, and 2) I'm a longtime geek about Goose Pond¹ and curious to learn what's out there in addition to the planted prairies and native wetland plants.

So, to get started – team building. I wanted to focus on Goose Pond and to highlight a seldom investigated aspect of the property. I also wanted to involve local folks who were interested in native plants. Lots of people were interested, but none of us could lead a Florathon. Searching for a leader, I soon discovered all the real experts, who knew where to look and could identify most plants off the top of their heads, were already on a team. Through lots of texts, emails, and phone calls, I connected with David Mow. He was game to lead a second team. He agreed to do so after gaining permission from the Florathon Committee, as he was already on a real team that actually had a shot at winning.

David's a good sport and loves to be in the field, so the two of us made up the 2022 Goose Pond Hunters. I was excited to meet him in person the morning of our search, and quickly learned I was probably overdressed for the outing, with my heavy field pants, hat, boots, and bug spray. Here's David with his signature headband, shorts, and experienced hiking boots, plus a backpack full of field guides. He declined the bug spray and said he preferred shorts because the thorns didn't stick to his legs like they did his pants. So, lesson number one was no need to overdo field attire.

Our first stop on Goose Pond was Thousand Islands, the old strip-mine land, and the only area with substantial woods. Then we moved on to open prairies and wetland edges. It was a chance to walk the property in spring before the summer prairie grasses and forbs tower over our heads. We found 27 plants in bloom. Now here I'll testify that David really follows the rules. I would have sworn some of the "almost but not quite" full flowers should have

been counted. I know Goose Pond has lots of plants, as the record shows 417 vascular plants found on Goose Pond in one day during the 2016 Bioblitz. But those IDs were not limited to species with open flowers and, also, spring is not the peak season here. Goose Pond has little in the way of spring-blooming shady groves. Instead it favors summer tall grass prairies that remind us of "what a thousand acres of Silphiums looked like when they tickled the bellies of the buffalo" (Aldo Leopold).

One of our last stops proved to be the best one. David found a new-to-me (and him) plant, common dwarf dandelion (*Krigia cespitosa*), which has a somewhat spotty distribution in Indiana. I was relieved that the whole venture did have a plus for David, as he was willing to help me partly because, as he observed, "you never know what you'll find 'til you look." David was super patient with all my questions. He never gave up on me, even after reminding me for the fourth time what Carolina cranesbill (*Geranium carolinianum*)

was. For my next Florathon I hope to recruit more rookie botanists as this was the best hands-on out-in-nature way to learn what's at our feet if we only look. I hope other Florathon teams will adopt a learner or two – it inspires, it motivates, it gets us to see the beauty of Indiana. If I can re-recruit David to lead another Goose Pond Hunters, I plan to bring along a few folks like me who have lots of enthusiasm, but are severely dependent on a field guide AND a patient teacher!

Barbara Simpson, a member of the Central Chapter of INPS, has a day job as the Indiana Wildlife Federation Conservation Policy Director.

Footnote

¹ Goose Pond is a 9000-acre restored wetland and upland prairie in Greene County, formerly all farmland except for a corner of old reclaimed strip-mine.

True to the motto of "you never know until you look," common dwarf dandelion was among the surprising finds of this Florathon outing.



Bill Thomas



David Mow

A selfie of David and Barbara on their Florathon adventure.

Wild Rice (*Mnomen*) in Northern

By Carrie Vrabel

Wild rice, *Zizania aquatica*, once grew abundantly in northern Indiana, ranging from Lake and Newton counties, through Jasper and White counties, along the Tippecanoe River through Fulton and Kosciusko, and as far east as Steuben County. By mid-summer, this annual grass, with its long narrow leaves and plume-like flowering stalks as tall as nine feet, formed robust beds in sluggish-water habitats and along the margins of glacial lakes.

Indiana-born novelist Theodore Dreiser (1924) recalled that, in the late 19th century, the marshlands of Kosciusko County, in particular, "were among the most picturesque areas of this region," and that wild rice, "flourished agreeably and poetically here throughout the spring, summer, and fall." Dreiser (1916), reflecting on changes in Kosciusko County during his lifetime, wrote, "All was changed. The wild rice fields that once stood about here for what seemed miles to me, and overrun in the summertime (July,

August, and September, in particular) with thousands upon thousands of blackbirds and crows, were now well plowed cornland!" "Infrequent" occurrence of *Z. aquatica* in 14 counties across northern

Indiana was recorded in the *Flora of Indiana* (Deam 1940), but by 2016, when Dr. Jennifer Kanine, the Director of Natural Resources for the Pokagon Band of Potawatomi, went looking for what was once an essential staple food for Potawatomi and Miami people, not to mention a keystone species relied upon by countless wildlife, it had practically vanished. So, what happened to our native wild rice?

To minimize flooding in farm fields, farmers began to straighten rivers, which damaged or destroyed the floodplains where wild rice grew. Climate change and changing hydrology also has had a major impact – more flooding and higher water levels can break the tall thin stalks of wild rice and keep it from establishing. It doesn't help that wild rice has an unassuming look. It is, after all, a grass, and without knowledge of its cultural and environmental importance, private homeowners may see small surviving patches of our native wild rice as tall grass growing in the water at the ends of their docks in the way of their sightlines, and rip it out. All of this has left the fate of wild rice in northern Indiana in a precarious position. That's where the Pokagon Band of Potawatomi have thankfully stepped in.

The Potawatomi have an ancient migration story that their ancestors once lived on the eastern seaboard. In the story, a prophet tells the tribe elders to travel west until they find a place where food grows on the water. Once they find that place, the prophet says, they will have a good chance at survival. So, when the Potawatomi found *mnomen*, the Potawatomi word for wild rice which translates to "good berry," growing in the rivers and lakes of northern Indiana and southern Michigan, they made it their home.

Because of its cultural significance, the Pokagon Band of Potawatomi in northwest Indiana and southern Michigan have been trying to plant and harvest wild rice on their properties for years with very little success. One planting of hundreds of pounds of seeds would only yield 150-200 stalks. When Dr. Jennifer Kanine was hired by the Potawatomi tribe in 2014, she found that they were planting seed purchased from northern Minnesota which were of *Z. palustris*, a northern species less well-suited for the climate of southern Michigan. Determined to find a more local seed source, she set out to see if she could find any native *Z. aquatica* left growing in northern Indiana.

Dr. Kanine approached the National Park Service, which suspected there was wild rice growing in the Indiana Dunes National

Dancing on the parched wild rice grains is a traditional way of separating the grain from its husk.



Jennifer Kanine

Indiana, a Native-American Staple

Park. Within the dune and swale complex, 100 acres of wild rice were identified, and this remains the most robust source of our native wild rice left in northern Indiana. Dr. Kanine has put her focus on protecting the wild rice in the Indiana Dunes National Park, which contains primarily *Z. aquatica*, but *Z. palustris* as well, in smaller quantities. She and the Pokagon Band's Department of Natural Resources monitor the health of the wild rice and remove invasive species that threaten it, including non-native phragmites (*Phragmites australis* subsp. *australis*) and hybrid cattails (*Typha x glauca*). They are also planting *Z. aquatica* seeds from the dunes on suitable lands across northern Indiana in order to encourage its return.

Outside of the National Park, Dr. Kanine continues to actively search for other occurrences of wild rice in Indiana by analyzing Geographic Information System (GIS) data layers to identify localities that might have it, and then visiting those areas in person. As a result, she has found small patches on state land and is currently monitoring those spots and working on restoration efforts in cooperation with the Indiana DNR.

At the same time, the role played by native Americans in conservation of wild rice continues to expand. In 2016, members of the Miami tribe living in northeastern Indiana were made aware of the existence of a 50-acre bed of wild rice in Kosciusko County and are closely monitoring its preservation. In 2018 and 2021, the Pokagon Band of Potawatomi, in partnership with the National Park Service, were awarded Great Lakes Restoration Initiative Grants to fund their attempts to study, and hopefully re-establish, wild rice in northern Indiana and southern Michigan.

Meanwhile, Nicole Holloway, Cultural Activities Coordinator at the Pokagon Band of Potawatomi, is working to keep the cultural importance of wild rice alive among the Potawatomi people. Wild rice is often served at cultural events in a traditional dish that includes cooked rice, dried berries, maple syrup, and meat. Some tribal members eat

it in their homes on a regular basis. She also holds wild rice processing workshops for members that teach the traditional ways of separating the edible rice grain from its husk and includes a ritual of dancing on the parched grains. Holloway considers our native wild rice to be an essential part of the Potawatomi people's cultural identity.

Regardless of your cultural identity, much of the work being done to identify, protect, and restore wild rice beds in northern Indiana feels like the process of remembering something important about the lands we all call home, something that we had almost forgotten.

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Many hands work the wild rice winnowing basket.



Dani Tippmann



Jennifer Kanine

Carrie Vrabel is a writer, wild food forager, state-certified wild mushroom identification expert, founder of Wild Edible Indiana, and a member of the Northeast Chapter of INPS. Nicole Holloway provided Potawatomi cultural insights, Dr. Jennifer Kanine restoration details, and Dani Tippmann the role of Miami people via interviews during March 2023.

Harvesting mnomen by canoe in a wild rice marsh located in the Indiana Dunes National Park.

Native Clovers in Eastern Grazing Lands — A View from the Research Community

By Joe House

Native clovers (*Trifolium* spp.; family Fabaceae) have been used for centuries in temperate and tropical grazing lands. These legumes benefit both natural and agricultural ecosystems through increased forage production, improved soil health, and reduced fertilizer costs. However, many native clovers have been omitted from the botanical composition of our eastern US grazing lands.

In the western US, native clovers are nutritionally beneficial and an important source of protein for wildlife throughout rangelands. These western clovers establish in stands and grow similarly to their non-native equivalents (Lulow 2008).

In eastern US grazing lands the most common species are red clover (*T. pratense*) and white clover (*T. repens*). These species followed settlers into the eastern US as part of the introduced pasture seed mixes. Non-native clovers contribute high forage production and quality, nitrogen fixation, and have tolerance to grazing pressure in grasslands (Muir et al., 2011). On the other hand, native clovers, such as buffalo clover (*T. reflexum*) and running buffalo clover (*T. stoloniferum*; note the slightly different common names applied to these two species), have not been extensively adopted in agricultural systems. A series of recent studies suggest that native clovers have similar agronomic performance relative to traditional red and white clovers. Species native to the eastern US, such as Carolina clover (*T. carolinianum*) and peanut clover (*T. polymorphum*), in addition to the buffalo clovers, have improved pest resistance relative to red and white clovers (Taylor et al. 1994). Running buffalo clover also appears to persist in regularly grazed pastures (e.g., Richmond, KY; Peru, IN). Buffalo clover has a similar seed weight and comparable establishment dynamics as red and white clovers (Sanne & Kubesch 2023).

Limited commercial availability of native clovers has prevented their adoption. Research and commercialization efforts are underway. A

specific breeding trial at Virginia Tech has found that running buffalo clover can be selected using single plant methods (Kubesch, unpublished data). The performance of buffalo clover and its integration into regions of the southeast US looks promising (Sanne & Kubesch 2023). Another trial is currently underway to determine the nutritive value of buffalo, Carolina, peanut, and running buffalo clovers for livestock grazing.

Native clovers have contributed to the ecology and natural history of the eastern US, especially Indiana. While these species are not as visible in native plant communities as other, more charismatic species such as species of *Echinacea*, native clovers contribute to the diversity of mammalian, insect, and bird herbivores and omnivores in Indiana. These clovers have been replaced by a plurality of introduced species from the Old World. However, recent research suggests that native clovers could fulfill many of the same roles, especially in modern pastures (Sanne & Kubesch 2023). Increased use of these native clovers can score a win for both conservationists and farmers!

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The senior author, Joe House, is a Forestry student at Purdue University. His co-author and mentor in legume research is Jonathon Kubesch; other co-authors in this research include Virginia Tech colleagues Peter Arnold, Jenna Beville, Forrest Brown, Dillon Golding, Derek Hilfiker, Lauryn Jansen, and Frank Reith.

Scott Namestnik



The native running buffalo clover has stolons but bears its flower heads on the erect stems.

Native Plants and Me: The Spark that Lit My Fire

By Ruth Ann Ingraham

What was the “spark” that triggered my interest in native plants? I credit not one but a trio of people – Kay Yatskievych, Mike Homoya, and Lee Casebere. It began for me in 1992 when Kay spoke to the Indianapolis Museum of Art’s Horticultural Society about the field guide she was then developing, *Indiana Wildflowers*. As an aside, she mentioned that Indiana was the only state east of the Mississippi River without a native plant society. Not able to define a native plant, I nevertheless felt moved to call a meeting the following year to remedy this omission. INPS, originally Indiana Native Plant and Wildflower Society (INPAWS), became reality and my native plant journey began.

In the autumn of 1993, newly formed INPAWS sponsored a book-signing event at Oldfields, on the now Newfields campus, to honor the publication of *Orchids of Indiana*. This stunning, timeless book combines the expertise of author Homoya and photographer Casebere. It opened my eyes to the exquisite but little known beauty and variety of these native flowers, different from the cattleya orchids I knew and had pinned to my “formals” in high school. Then I discovered several orchid species that grew amidst and near the understory of my wooded property in Brown County. Yellow lady’s-slipper (*Cypripedium parviflorum* var. *pubescens*), lily-leaved twayblade (*Liparis liliifolia*), showy orchis (*Gasearis spectabilis*), cranefly (*Tipularia discolor*), and puttyroot (*Aplectrum hyemale*) were a marvel. They inspired me to grow my awareness of and appreciation for our often little-known flowers and all the better known native forbs, shrubs, trees, grasses, and sedges found in our fields, fens, woodlands, parks, and yards.

Without the trio of friends I’ve mentioned above and my evolving interest in native plants, spicebush (*Lindera benzoin*) might not be flourishing in my Indianapolis garden today. And without these shrubs, I would have missed one of my life’s most astounding experiences. I was outdoors the afternoon of July 16, 2022, when I observed a spicebush swallowtail butterfly (*Papilio troilus*) deposit a nearly invisible egg on the underside of one of its larval foods, a spicebush leaf. A week later, true to normal progression, a tiny caterpillar emerged. The leafy branch

on which the egg had been laid hung over the sidewalk at my busy intersection. To protect it, I clipped off a twelve-inch portion of the branch and brought it with the caterpillar into my kitchen where it lived until the end of August when, after four instars and its chrysalis stage, a beautiful, fully-formed butterfly, which I named Cate, unfolded. I sent her on her way.

Sparks come in many forms and, with good fortune, one spark ignites another and another

Ruth Ann Ingraham, a founding member of and historian for INPS, is a member of the Central Chapter.



courtesy of Ruth Ann Ingraham

Fogging — continued from page 14

You submit a one-page form online with a brief description of the problem. Download the form from the following link before you fill it out.

https://oisc.purdue.edu/pesticide/pdf/complainant_form.pdf

There is only space for about three lines of text, so the description must be succinct. To help your case, you may include photographs and videos of the applicator in action close to your property line. With the new high-powered backpack foggers, the spray seems to be more visible, and you may be able to document it coming into your yard. Even cell phone shots can be invaluable.

An investigator will come to your property to take samples in places where you think the drift landed. Chemical residue can persist for up to 30 days, even if it rains during that period. Lab results can take up to 90 days, and the entire process can span nine months until Purdue’s compliance officer declares “case closed.” As a result of complaints, mosquito fogging franchises have been charged with various types of violations, ranging from a warning to a civil penalty of \$1,000. As David Scott, administrator of the Indiana Pesticide Review Board, said at the board’s February 2022 meeting: “Individuals may take risks for themselves, but it’s not okay for them to decide for their neighbors.”

Mary Ellen Gadski has been the International Projects Coordinator for the Amos Butler Audubon Society for more than 30 years and has served as a board member, officer, and newsletter editor of this organization.

Indiana Summer and Mosquito Control

By Nancy Tatum

Summertime in Indiana and mosquitos – an all too familiar and irksome couplet. Not surprising, then, that a number of companies in Indiana have decided to go into the business of spraying yards with pesticides to get rid of them. Unfortunately, it's not just the mosquitos that are dying, because the insecticides are broad spectrum. These kill critters

that we want in our native plant gardens – pollinators, fireflies, spiders, earthworms, and more. The sprays can drift and, even if you don't do this in your own yard, your garden and yard may have these chemicals (Gadski 2021).

The fogging company may argue that pyrethroid-based products are safe. Those in current usage are synthesized rather than from natural sources and more resistant to breakdown and more toxic to insects. The jury is still out as to how dangerous they may be to humans and animals, but caution is advised while further research takes place (Hoyńska-Iwan & Szewczyk-Golec 2020). Then too, the American Academy of Pediatrics (AAP-CEH 2012) has identified “landscaping chemicals” (which includes pyrethroids) as important contributors to childhood illness.

Mosquito control should begin with the appreciation that not all mosquitos are bad or irksome. They are an important part of the food web for many vertebrates, including hummingbirds and bats. Their role in pollination is understudied, due to their predilection of being most active at dusk. But they clearly do visit some orchid species (most notably a northern bog species, *Platanthera obtusata*).

Dealing with mosquitos in your yard and neighborhood should begin with larval control, rather than control of the adult stage which may prove rather ineffective. Doug Tallamy, Professor of

Entomology and Wildlife Ecology at the University of Delaware, recommends creating mosquito traps. Put out five gallon buckets of water in a sunny spot and add a handful of hay or straw. This concoction will result in an irresistible brew to egg-filled female mosquitos who will lay their eggs there, after which the buckets can be dumped and the eggs/larvae destroyed. He recommends adding a commercially available mosquito dunk tablet that contains *Bacillus thuringiensis* (Bt) to water-filled buckets. Others argue, however, that this still does harm to non-biting insects, such as midges, whose abundance in wetlands make them a major food source for aquatic animals, birds, and bats (Xerces Society 2023).

Other ways to control mosquitos and the larvae are to frequently dump bird baths and refill. Keep downspouts clear of standing water. Even a bottle cap filled with water can hold dozens of eggs. Use aerators in backyard ponds. Mosquitos do not like moving water – females will only lay eggs in still water. Kiddie pools can be a mecca for egg laying. Note that eggs can stick to the sides of buckets, water-filled gutters, and any water holding container. Finally, encourage natural enemies in your yard, such as damselflies, bats, and birds.

If you have neighbors that hired a company that sprays for mosquitos, you can have your plants checked to see if there is pesticide drift (see sidebar by Mary Ellen Gadski). As noted by the Xerces Society, the more complaints that are filed against overzealous mosquito spraying, the more power we have over our own property and pollinator gardens.

I spoke with Amanda Smith, Superintendent of Natural Resources and Education for Hamilton County Parks. She suggests that when you are outdoors, personal protection is number one. Wear long sleeves and long pants.

The all too automatic response of controlling pests by using insecticides kills beneficial insects. Instead of looking at the leaf that is chewed in your garden and assuming it is a “pest,” take time to learn more about the insect or caterpillar. It really could be something good.

Mosquitos truly can be pests. They have been known to carry deadly diseases. Make yourself comfortable and mosquito free by following some of the suggestions and have a happy outdoor experience!

Mosquitos — continued at right

Are You a Sitting Duck for Drift from Mosquito Fogging?

By Mary Ellen Gadski

The 2021 and 2022 spring issues of Amos Butler Audubon's newsletter have contained my articles on the harmful effects of mosquito fogging, highlighting the risks to birds as well as to human health. Fogging with synthetic pyrethroids kills all insects, not just mosquitos. Insects that most people view as beneficial – honey bees, butterflies, caterpillars, fireflies, ladybugs – and even some earthworms, all are killed by the sprays. This, in turn, reduces the food supply of song birds. For more information, see:

<https://www.amosbutleraudubon.org/2022/05/26/the-harmful-effects-of-mosquito-fogging/>

If you are concerned about getting pesticide drift on your property from applications made to your neighbors' yard, you have the right to submit a complaint to the Office of the Indiana State Chemist at Purdue. It is a fairly easy procedure.

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Lupine — continued from page 16

on the hindwings. Karner blues also have more orange spots than the eastern tailed-blue.

Karner blue butterflies have two broods during a year (Belth 2013). Their first adult flight period takes place in May and early June. Adult Karner blue butterflies lay eggs on or near wild lupine. Once caterpillars emerge, they feed solely on wild lupine leaves. After a complete metamorphosis, or full life cycle, the second flight period begins in July.

During 2008, I observed Karner blue butterflies flying about during the weeks of Memorial Day and Independence Day. Unfortunately, despite efforts to search known Karner blue butterfly locations, there have been no recent observations of this butterfly in Indiana. It is now considered extirpated from the state.

On a positive note, there have been recent sightings of the frosted elfin in northwest Indiana. These diminutive butterflies are mostly brown on both sides of the wings. An identifying feature that sets this butterfly apart from other elfins is a small black spot on the underside of the hindwings near their tiny tails. The larvae of frosted elfin feed on wild lupine flower buds. There is a single brood that flies from late April to early May.

The Persius duskywing is another Indiana species of butterfly that requires wild lupine for survival. These small spread-wing skippers have dark brown wings with a mottled appearance. The

Persius duskywing is similar to the more common wild indigo duskywing (*Erynnis baptisae*). In order to identify the Persius duskywing look for a straight row of small white spots near the edge of the forewing; if you have an adult male notice the light-colored hairs on the upper forewings. Accurate identification of Persius duskywing may require examination through a microscope.

Conservation organizations, such as the Indiana Dunes National Park, the Indiana Department of Natural Resources, The Nature Conservancy, and Shirley Heinze Land Trust, in concert with utility companies, have been working together to protect and actively manage sand savannas and sand prairies in northwest Indiana for decades. It is imperative that this management of habitats containing high-quality plants and insects continue. I have observed some of the most glorious displays of wild lupine in Indiana just months after successful prescribed fires. And, if you have the opportunity to observe wild lupine in these landscapes, take a moment to look for interesting insects that depend upon these plant oases.



Paul Rothrock

The palmately compound leaves of wild lupine track the sun's movement.

Mosquitos — continued from left

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Nancy Tatum is VP of INPS Central Chapter.

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Wild Lupine: a Butterfly Oasis



By Derek Nimetz

During the hot summer months, many people visit the Indiana Dunes to recreate along the shores of Lake Michigan. For some of us, summer is also a wonderful time to search for exciting plants and their insect associates. One of my favorite native plants found in the Dunes is wild lupine (*Lupinus perennis*). Like compass plant (*Silphium laciniatum*), wild lupine tracks the sun with its leaves, so occasionally the common name sundial lupine is used.

Wild lupine, along with clover, is a member of the pea family (Fabaceae). The palmately compound leaves of this perennial plant start to emerge during the month of April. It can grow up to two feet tall and flowers from late April into June. The bilaterally symmetrical flowers occur on terminal racemes or spikes. Flower color ranges from light blue

Karner blue butterflies, which depend upon lupine as larval food, were last seen in Indiana in 2014. to purple and even shades of pink and white. As the growing season continues, the hairy legumes, or seed pods, each containing two or more seeds, will turn from green to dark brown (Pilla & Namestnik 2022).

Wild lupine is an upland plant that prefers dry to dry-mesic sandy soils. These plants thrive in open sand savannas, sand barrens, and sand prairies. Under ideal conditions, wild lupine grows in dense populations that cover large areas, as seen in some of Indiana's high-quality savannas. Wild lupine can also occur in somewhat disturbed areas, such as roadside margins, utility rights-of-way, and field edges.

Historically, wild lupine ranged from Texas to Florida and north to Maine and Minnesota. Deam (1940) reported wild lupine from 18 of the northern Indiana counties. Unfortunately, this number has declined over the decades due to the loss of habitat and habitat degradation, especially due to the suppression of fires across the landscape.

Historically savannas formed a transitional zone between open prairies (with lots of sun exposure) and deciduous forests (with lots of shade). Without periodic fires maintaining an open oak tree canopy, savannas fill in with additional trees and plants that are less fire tolerant. As time continues without fires, overgrown savannas become increasingly less suitable habitat for wild lupine.

It is important to consider that the decline of wild lupine inevitably results in a decline of the insects that rely upon these plants. In Indiana, wild lupine is the larval host plant for three species of butterflies, including the Karner blue (*Plebejus samuelis*), frosted elfin (*Callophrys irus*), and Persius duskywing (*Erynnis persius*) (Shull 1987). Although wild lupine is not considered a rare plant in Indiana, the butterfly species are endangered or even extirpated in the state. Since 1992, the Karner blue has been listed as a federally endangered butterfly species, and currently the U.S. Fish & Wildlife Service is reviewing the national status of the frosted elfin.

Of these butterfly species dependent upon wild lupine, the Karner blue is the most colorful. These small butterflies are blue to dark gray when viewed from above. The underside of the wings is lighter in color with a row of orange spots along the hindwing margin. The Karner blue looks similar to the more commonly encountered eastern tailed-blue (*Cupido comyntas*) but can be distinguished by the lack of a tail

Lupine — continued on page 15